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DEVELOPMENT OF NEW TRAINING CONCEPTS AND PROCEDURES
FOR UNIT TRAINERS

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DEVELOPMENT OF NEW TRAINING CONCEPTS AND PROCEDURES FOR UNIT TRAINERS

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and

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UNIT TRAINING AND EVALUATION SYSTEMS TECHNICAL AREA



U. S. Army

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FOREWORD

The research reported here is part of a broader research program on unit training and unit performance assessment being conducted by the Unit Training and Evaluation Systems Technical Area of the Army Research Institute for the Behavioral and Social Sciences (ARI). The need for improvements in training in units was brought out by the report of the Board for Dynamic Training (Gorman Board) in 1971. In 1972, ARI formally established a mission and provided resources to conduct research on unit training and evaluation.

This publication is part of the final report on Project UTRAIN, Research on Methods of Enhancing the Training Capability of Unit Training Personnel, which was directed toward development and trial implementation of an experimental training program for prospective unit training personnel. It describes a study of unit trainer needs, the development of training to meet a part of those needs, and implementation of the training in the Infantry Officer Basic Course at Fort Benning, Georgia. A second volume presents a detailed outline of the UTRAIN instructional block and is intended to be used to prepare officers and NCO's to manage and conduct performance-oriented instruction in their own units; it is available from the U.S. Army Training and Doctrine Command (TRADOC), Fort Monroe, Virginia 23351.

ARI research in this area is conducted as an in-house effort augmented by contracts with organizations selected as having unique capabilities and facilities in training research. The work reported here was done jointly by personnel of the Human Resources Research Organization (HumRRO), Louisville, Kentucky under Contract No. DAHC 19-73-C-0035, and ARI. The research was conducted under RDTE Project 2Q063101A733, FY 1973 Work Program, and is responsive to requirements of the Combat Arms Training Board (CATB) of TRADOC.



J. E. UHLAUER
Technical Director

DEVELOPMENT OF NEW TRAINING CONCEPTS AND PROCEDURES FOR UNIT TRAINERS

BRIEF

Requirement:

To develop a course to prepare officers and NCO's to manage and conduct performance-oriented training in their own units.

The Research Product:

A survey of nine battalions at different installations and 10 courses at Army schools, together with discussions with the Combat Arms Training Board (CATB), determined that a prototype course should be developed to teach the basic methods of instruction for performance-oriented training at the Infantry School's Officer Basic Course (IOBC), Fort Benning, Georgia.

The prototype 10-hour course first presented to the entire class 3 hours of lectures and demonstrations on the principles and techniques involved; for the remaining time small (10-man) groups practiced, using a prepared list of suitable short tasks. Each man was assigned a specific task, given 2 hours to prepare a 20-minute presentation, and took his turn teaching the task to the others in his group. Performance tests determined whether he and his fellow students had been effective.

The UTRAIN course was evaluated by Infantry School observers, who recommended that it be implemented in the IOBC, and by a survey of the first IOBC class, a majority of whom felt it was effective and useful. A small empirical evaluation was also made which compared the effectiveness of 8 instructors with only 15 hours of the UTRAIN course with that of 8 experienced Army instructors. In it, 24 recent Basic Combat Training graduates, divided into four groups, were taught four unfamiliar tasks, two of them equipment-oriented and manipulative and two involving complex mental activity. Groups were rotated so that everyone learned each type of task from a UTRAIN and a non-UTRAIN instructor. As might be expected, more students of the experienced, non-UTRAIN instructors passed the performance tests at the end of each class (an average of 4 out of 6 compared to 3 out of 6 for UTRAIN instructors); however, the difference was entirely on the mental tasks. All groups performed equally well on the manipulative tasks. UTRAIN appears to be a useful method for quickly training inexperienced personnel to teach equipment-oriented, manipulative skills.

Utilization:

UTRAIN has been implemented at the Infantry School Officer Basic Course, and adapted for NCO courses, as an Instructor Training Course for service school faculty, for Reserve/National Guard instructors, and for instructors of specialized element training.

While UTRAIN is adaptable, it is important (1) to insure maximum student participation when presenting the principles and techniques of performance-oriented training, (2) to develop exercise tasks that are job oriented, and (3) insure that exercise tasks are unfamiliar to the trainees.

DEVELOPMENT OF NEW TRAINING CONCEPTS AND PROCEDURES FOR UNIT TRAINERS

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DEVELOPMENT OF NEW TRAINING CONCEPTS AND PROCEDURES FOR UNIT TRAINERS

INTRODUCTION

BACKGROUND

Until recently, research on Army training has focused on problems in training centers and service schools. Training in units is now receiving increased attention. That attention was spurred by the 30 June 1971 message from the Army Chief of Staff, which directed that responsibility for training be decentralized to the battalion and company levels. Decentralization made unit trainers responsible for determining unit training needs and tailoring training to meet those needs.

Training doctrine at that time was oriented toward a school environment. Typically, doctrine pertained to training that was organized around subject matter, governed by time requirements, and delivered by lecture. Naturally, then, training for officers and NCOs who were to be responsible for managing and conducting unit training prepared them for a school rather than a unit environment.

The Board for Dynamic Training was established to evaluate the status of unit training and recommended improvement of the unit training system. The Board recommended extensive efforts to improve the resources available to unit trainers as well as a revision of training doctrine.¹

The Combats Arms Training Board (CATB) was organized to implement recommendations of the Board for Dynamic Training. Among other activities, CATB has (a) located, screened, and catalogued training materials, aids, and devices to increase their availability to unit trainers; (b) developed literature to support training on combat-arms missions; and (c) supervised development of performance objectives for tasks performed in the combat-arms. These efforts have enabled unit trainers to organize training around tasks soldiers were expected to perform.

Training doctrine was also being updated. The U.S. Army Infantry School was revising FM 21-5, *Military Training Management*, Dec 64² and FM 21-6, *Techniques of Military Instruction*, Jan 67³ to support a "performance-oriented" approach to training. In such an approach, an instructor facilitates learning by supervising meaningful practice of the task and spends very little time lecturing.

PROBLEM

Despite the efforts of CATB and the Infantry School, there was concern within the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) that the changes in training responsibility and doctrine would not fully benefit units unless unit training personnel were skilled in managing and conducting performance-oriented training. The problem was to develop a course to prepare officers and NCOs to conduct performance-oriented training in units.

¹ U.S. Continental Army Command. *Report of the Board for Dynamic Training*, Volumes I-VI, December 1971.

² TC 21-5-1, *Training Management Digest*, April 1973 is the revision of FM 21-5.

³ FM 21-6 (draft), "How to Prepare and Conduct Military Training," June 1974 is the revision of FM 21-6.

OBJECTIVE

The research objective of the UTRAIN project was to develop and test an experimental program of instruction for unit training personnel. The experimental program had to complement existing school training in conduct of unit training, reflect current requirements for training at the unit level, and represent the best available state-of-the-art in the management and conduct of unit training.

Work to accomplish the objective was completed in three phases:

- (1) Problem definition.
- (2) Instructional program development.
- (3) Program evaluation.

SUMMARY AND CONCLUSIONS

PROBLEM DEFINITION

Answers to four questions defined the problem of developing an experimental program of instruction for unit training personnel:

- (1) For which target group should the program be developed?
- (2) Which aspect of training should be emphasized—training management (TM) or methods of instruction (MOI)?
- (3) Where should the training be given—in a school or as unit OJT?
- (4) What will be the constraints on program design?

The answer to the first question was sought through a survey of field units. The survey indicated that everyone from squad leader through battalion commander manages or conducts training at some level. Most training management activities are the responsibility of officers, but more NCOs are involved in training management than was expected. Overall, the duty position most involved in the broadest range of training activities was the company commander.

The second question was addressed by analyzing course materials on TM and MOI in various Army service schools. All TM and MOI training given in the schools at the time of the survey was relevant to at least some unit training activities. However, no school presented training related to all activities. Furthermore, in most cases, available school training either was oriented toward lecturing or provided only familiarity with the concepts of performance-oriented training. For the company commander position, which by doctrine is staffed from the Officer Basic Courses at the various service schools, it appeared that TM and MOI should both be emphasized.

The third question was answered in discussions among research personnel and CATB representatives. It was decided that a service school would be the preferred location for the training. In discussion with representatives of the Infantry School (as the proponent U.S. Army Training and Doctrine Command (TRADOC) school for training instruction), it was finally agreed that the course should be aimed at officers in the Infantry Officer Basic Course (IOBC) and should address only the conduct of training. Five constraints on the design of the program were specified through these discussions:

- (1) The program had to accommodate a class size of 150.
- (2) The program could be no longer than 10 hours.
- (3) Videotape recording and playback equipment would be available.
- (4) No major expense could be allowed for equipment or supplies.
- (5) The program had to exemplify the principles of performance-oriented training.

UTRAIN COURSE

A draft course outline was prepared based on 10 hours of available time. The first three hours are devoted to presenting the principles and techniques of performance-oriented training; the remaining time is devoted to practical exercise presentations. For the practical exercises each soldier presents training on an assigned task. Each is given training guidance for the task. Two hours are allotted to prepare the training. The training is presented in 10-man groups. For each presentation one soldier is the instructor, three are evaluators, and six are trainees who receive the instruction. After the 10-25 minutes it takes an instructor to qualify the trainees, the evaluators critique the presentation under supervision of a moderator. After each presentation soldiers rotate positions.

The training aids for the first three hours included the following:

- A videotape recording of three training incidents used to illustrate application and violation of performance-oriented training principles.
- Readily available items such as string and paper to graphically illustrate principles of performance-oriented training with simple, inexpensive examples.
- A videotape recording of an instructor training a small group to disassemble/assemble the caliber .45 pistol.

Selecting suitable practical exercise tasks was a surprisingly difficult part of the developmental efforts. Tasks had to be simple enough to be taught in 10-25 minutes, requiring only readily available equipment. They had to be unfamiliar to IOBC students, yet also be relevant to the range of problems in a unit. A final set of 15 tasks, representing a variety of relevant military tasks, was selected. Performance tests and lesson plans developed in accordance with revised FM 21-6 were prepared for each task.

Four developmental trials of the course were conducted—two at the Armor School and two at the Infantry School. The course was revised after the first three trials. The trial presentations gave an opportunity to verify the suitability of the practical exercise tasks and to evaluate the draft videotapes. The scripts for the videotapes were revised after the second presentation. The final versions were produced at the Infantry School.

The final trial presentation, at the Infantry School, demonstrated that the course was ready for implementation. In January 1975, the Infantry School obtained TRADOC approval to implement UTRAIN in the IOBC curriculum. Subsequently, the Infantry School distributed UTRAIN materials to all TRADOC service schools.

EVALUATION

Informal evaluations of the UTRAIN course were conducted throughout its development. Participant and observer reactions provided a continuing basis for course revision. But once it had reached its final form, the course was subjected to more formal evaluation. There were three aspects of the evaluation:

- (1) Opinion of Infantry School observers.
- (2) Survey of officers in the first IOBC class to complete UTRAIN.
- (3) Comparison of training effectiveness of UTRAIN instructors with non-UTRAIN instructors.

Observer Opinion

Trial presentations of UTRAIN at Fort Benning were observed by Infantry School representatives responsible for determining whether the course should be implemented. The fact that they recommended implementing UTRAIN in IOBC indicates that their opinion was favorable. Their military judgment was an important indicator of whether UTRAIN met its basic goal—a block of instruction suitable for inclusion in Officer Basic Courses that would prepare officers to conduct performance-oriented training in units.

Survey of Course Members

A questionnaire was administered to the 197 students in the first IOBC class to complete UTRAIN. Most students considered the material presented in the first three hours meaningful, and nearly all thought it was presented effectively. A large majority of the students rated the full 10-hour block as effective in preparing them to conduct effective performance-oriented training.

Comparative Study

The effectiveness of eight instructors who had completed the UTRAIN course with two practical exercise presentations (15 hours) was compared with the effectiveness of eight instructors who had completed an 80-hour conference-oriented MOI course that included a 16-hour block on performance training. The non-UTRAIN group had had significantly more experience in both time in service and experience as instructors.

Each instructor trained six new BCT graduates to perform an AIT-level task. Effectiveness was measured by the performance test results of soldiers trained, and the time required to complete the training.

Non-UTRAIN instructors produced more students who passed the performance test than did UTRAIN instructors, and used slightly less instructional time. In neither case was the difference statistically significant. The apparent difference between the groups resulted from student performance on two cognitive tasks.

OTHER APPLICATIONS OF UTRAIN

Awareness of UTRAIN among Army officials during the developmental testing phase generated interest in other applications of the course. Assistance was requested to adapt the course for various situations. As a result of that assistance, some forms of the UTRAIN course appear valuable in four additional environments:

- (1) As part of the curriculum for NCO courses. The Armor School Faculty Development Branch adapted UTRAIN for the Armor School NCO Basic (E4, E5, E6) and NCO Advanced (E6, E7) Courses. Also, the Infantry School Directorate of Training included a block based on UTRAIN in the Primary NCO (E3, E4) Course.
- (2) As an instructor training course for the faculty of schools and training facilities. The course was presented in five workshops for the faculty of the Seventh Army Training Center and once for representatives of the NCO Academies in Europe. The course appeared to be effective for experienced platform instructors in reducing resistance to principles of performance-oriented training.

- (3) As instructor training for Reserve/National Guard trainers. The course was implemented by the Georgia National Guard to introduce performance-oriented training techniques to unit trainers. Since the course with minor revisions can be completed in one day, it was well-suited to the short, periodic training sessions available to reserve units.
- (4) To prepare instructors to conduct specialized element training. The principles of performance-oriented training taught by UTRAIN were used as the basis for organizing the REALTRAIN Controller Training Course at Fort Knox. This application suggested the value of using UTRAIN to prepare officers and NCOs for training new and reorganized units.

Experience in those four situations demonstrated the adaptability of UTRAIN. However, that experience also indicated that three characteristics should not be changed:

- (1) There should be maximum student participation when presenting the principles and techniques of performance-oriented training.
- (2) Practical exercise tasks should be similar to those tasks soldiers will encounter on the job.
- (3) Practical exercise tasks should be unfamiliar to soldiers acting as students.

**DEVELOPMENT OF NEW TRAINING CONCEPTS AND PROCEDURES FOR
UNIT TRAINERS**

TECHNICAL SUPPLEMENT

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PROBLEM DEFINITION

The objective of Project UTRAIN was to develop and test an experimental program of instruction for unit training personnel. Before the instructional program could be developed, the problem to be solved had to be defined more clearly. This was accomplished by:

- (1) Determining job requirements of unit training personnel.
- (2) Determining relevance and quality of school instructor training.
- (3) Identifying training needs of unit training personnel.
- (4) Selecting the location for initial course delivery, target group, and course topic.
- (5) Determining constraints on program design.

DETERMINING JOB REQUIREMENTS OF UNIT TRAINING PERSONNEL

UNIT TRAINING MODEL

The basis for determining job requirements of unit training personnel was the model of unit training responsibilities shown in Figure 1. The primary goal of unit training and the responsibilities associated with accomplishing that goal were abstracted from the *Final Report of the Board for Dynamic Training*⁴ and current literature pertaining to management and delivery of training.⁵

Activities implied by each responsibility were identified and stated so each statement:

- Defined a meaningful unit of performance.
- Described what personnel in the unit must be able to do.
- Was meaningful to incumbents in Unit TOE positions.

The 12 activities identified are listed in Table 1 by area of responsibility. The 12 unit training activities were the basis for the survey of Army combat arms units.

⁴U.S. Continental Army Command, *op. cit.*, 1971.

⁵U.S. Army Infantry School. *Training Management Handbook - I*, Circular 21-5-1, 1972.

U.S. Continental Army Command. *Training: Systems Engineering of Unit Training*, CON Pam 350-11, 1973.

Donald F. Haggard, Norman Willard, Jr., Robert A. Baker, William C. Osborn, and Shepard Schwartz. *An Experimental Program of Instruction on the Management of Training*, HumRRO Technical Report 70-9, June 1970.

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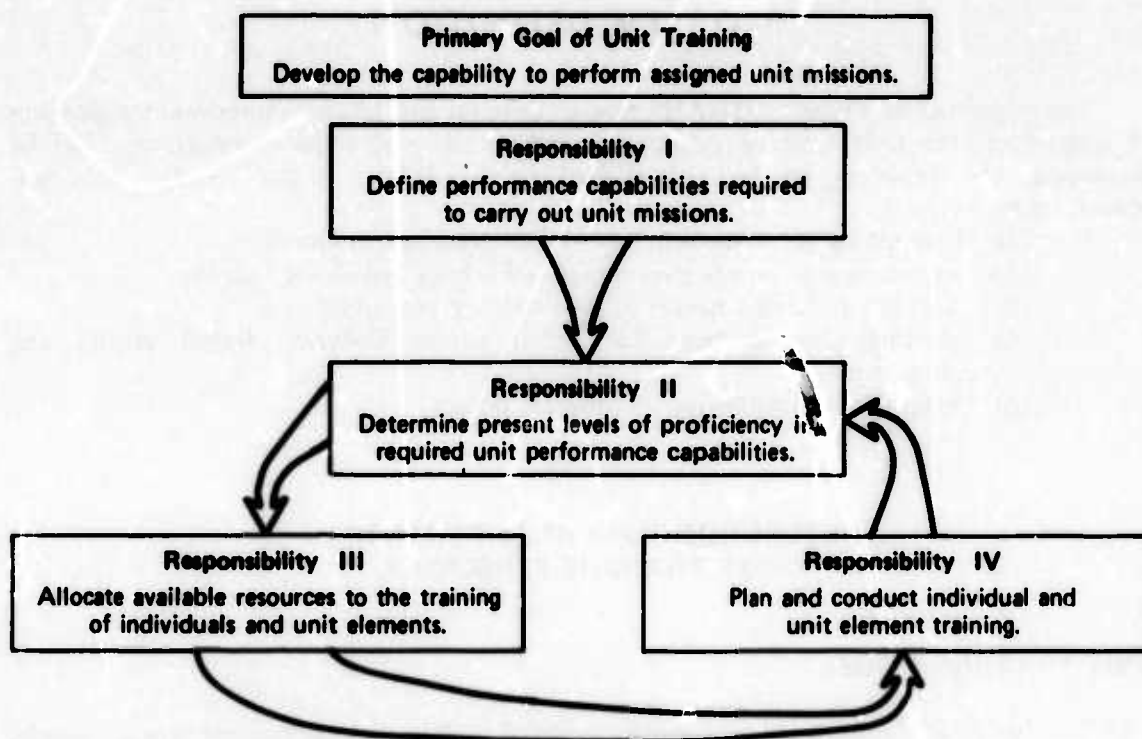


Figure 1. Unit Training Model

Table 1
Unit Training Activities

Define unit performance requirements.
1. Designate critical tasks required to fulfill assigned missions.
2. Identify conditions under which tasks must be performed.
3. Designate required task performance proficiencies.
Determine current proficiency levels.
4. Prepare tests and/or other evaluation instruments for determining task performance proficiencies.
5. Evaluate task performance proficiencies.
6. Document proficiencies of individuals and unit elements.
Allocate training resources.
7. Identify resources available to support training.
8. Commit training resources.
9. Schedule conduct of training.
Plan and conduct training.
10. Plan training methods and approach.
11. Give instruction on tasks.
12. Measure/check task performance.

UNIT SURVEY METHOD

Survey Sites

A survey of Army units was conducted to determine the critical job requirements of unit training personnel. Nine battalions were surveyed—two in each of the four combat arms (armor, infantry, field artillery, and air defense artillery) and one Reserve armor unit. Although the sample was small, selection of the type of battalion to be visited within each branch was designed to maximize representativeness of the conditions under which unit training is conducted. At the same time, consideration was given to the time and cost factors associated with the geographical dispersion of units and their ability to support the data collection effort within the survey time frame. The sites, type of battalion, and headquarters represented are shown in Table 2.

Table 2
Units Surveyed: Type of Battalion/Squadron,
Headquarters Represented, and Site Visited

Type of Battalion or Squadron	Headquarters Represented	Site Visited
Armored Cavalry Sqd	Non-Divisional	Fort Bliss, Texas
Tank Bn	1st Inf Div (Mech)	Fort Riley, Kansas
Infantry Bn (Mech)	1st Inf Div (Mech)	Fort Riley, Kansas
Infantry Bn	9th Inf Div	Fort Lewis, Washington
Field Artillery Bn, 155mm How. (SP)	1st Inf Div (Mech)	Fort Riley, Kansas
Field Artillery Bn, 105mm How. (towed)	9th Inf Div	Fort Lewis, Washington
Air Defense Artillery Bn (Chapparral-Vulcan)	Air Defense Artillery Center ^a	Fort Bliss, Texas
Air Defense Artillery Bn (Hawk)	Non-Divisional	Fort Bliss, Texas
Tank Bn	Kentucky National Guard	Fort Knox, Kentucky ^b

^aWas conducting Basic Unit Training, earmarked for assignment to the 9th Infantry Division at Fort Lewis, Washington.

^bHome station—Owensboro, Kentucky.

Semi-structured survey instruments were used to gather information to answer four questions:

- (1) Which of the 12 training activities are performed?
- (2) Which TOE positions perform each activity?
- (3) Under what conditions are the activities performed?
- (4) On which activities do unit training personnel want training?

These instruments, included as Appendix A, consisted of interviewer/interviewee instructions and 12 matrices—one for each of the 12 training activities listed in Table 1. Before conduct of the survey, the instruments and interview procedure were evaluated in a pilot survey of a battalion at Fort Knox, and suggestions for improvement were incorporated in the final instruments and procedure.

Survey Procedure

At each site the principal staff officer for training at the installation designated specific units to be surveyed. In each unit an initial joint interview was conducted with the unit commander and S3. The initial interview was divided into five parts:

- (1) The commander and S3 indicated which of the 12 activities they considered essential for that unit.
- (2) The commander and S3 indicated the TOE positions responsible for each activity at each level (individual, squad, platoon, company, and battalion). Positions with primary responsibility and assisting responsibility were recorded on the matrices.
- (3) The commander and S3 identified activities for which they were responsible. They also indicated whether they had performed those activities during their present duty assignment.
- (4) The commander and S3 identified conditions for performing the activities. Conditions included source documents used in training, assistance from outside the unit, and resource and time constraints imposed on training personnel.
- (5) The commander and S3 ranked the activities in order of their desire for training in how to perform each activity.

HumRRO personnel next interviewed at least one incumbent responsible for training activities at each level, as indicated by unit commanders and S3s. Incumbents indicated whether they had performed the training activities during their present duty assignments. Incumbents also identified conditions for performing the training activities and ranked the activities for which they were responsible in the order of their desire for training on how to perform the tasks.

UNIT SURVEY RESULTS

TOE Positions Performing Training Activities

Table 3 shows the TOE positions responsible for training at the various levels. As expected, the battalion S3 had the greatest span of training responsibility, the battalion commander and operations sergeant were involved in training only at higher levels, and squad/crew NCOs conducted training at lower levels. Only the assistant battalion S3 and battalion or company executive officer were not consistently responsible for unit training at any specific level. Those two positions were therefore omitted in subsequent analyses.

Tables 4 and 5 show the percent of incumbents in a TOE position who were designated as being responsible for training activities. The asterisks (*) indicate the proportion of incumbents who had performed each activity during their current assignment. As expected, the activities related to management of training (Activities 1-9) had been performed chiefly by senior officers. But NCO incumbents indicated a higher degree of involvement in training management than anticipated. Generally, personnel in all seven positions were involved in managing and conducting training, but company commanders were most involved across the full range of training activities.

Training Conditions

Answers to questions on training conditions revealed that direct assistance from service schools in training was available only at the battalion level. Most units did receive source materials from their service schools. These materials are listed in Table 6 with other literature used to support unit training.

Table 3
Involvement in Levels of Unit Training,
By TOE Positions

TOE Position	Level of Unit Training				
	Battalion	Company	Platoon	Sq-Crew	Individual
Officer					
Battalion Commander	x	x			
Battalion Executive Officer					
Battalion S3	x	x	x	x	x
Assistant S3					
Company Commander		x	x	x	x
Platoon Leader		x	x	x	x
NCO					
Operations Sergeant	x				
Platoon Sergeant		x	x	x	x
Squad Leader			x	x	x

Note. x indicates that over half in the TOE position were responsible for over half of the essential training activities.

Table 4
Percent of Officers in Unit TOE Positions Responsible
For Unit Training Activities

Unit Training Activities	TOE Position			
	Bn CO	Bn S3	Co CC	Pit Ldr
1. Designate Tasks	89**	100*	100**	100
2. Identify Conditions	89**	100*	100**	85
3. Designate Standards	89**	100	100**	85
4. Prepare Tests	89	100**	89**	85
5. Evaluate Proficiency	89**	89**	89**	85*
6. Document Proficiency	44	100**	78*	85
7. Identify Resources	78*	89**	100**	85*
8. Commit Resources	89**	89**	89**	85
9. Schedule Training	89	100**	100**	85
10. Plan Training	78	100**	100**	85*
11. Conduct Training	78	78*	100**	85
12. Check Proficiency	100*	89**	100**	85**

Note. * indicates that over half had performed as primary action officer; ** indicates that two-thirds or more had performed as primary action officer.

Table 5
Percent of NCOs in Unit TOE Positions
Responsible for Unit Training Activities

Training Activities	TOE Positions		
	Ops Sgt ^a	Plat Sgt ^b	Sq Ldr ^b
1. Designate Tasks	11	100**	100*
2. Identify Conditions	78	89	100
3. Designate Standards	44	89	100
4. Prepare Tests	78	89	67*
5. Evaluate Proficiency	78	78*	89**
6. Document Proficiency	78	78	67
7. Identify Resources	78	89	89**
8. Commit Resources	0	78	67
9. Schedule Training	78	78	78
10. Plan Training	67	89	89**
11. Conduct Training	78	100**	100**
12. Check Proficiency	67	100*	100**

^aOperations Sergeants were not interviewed to determine activities they performed.

^b* indicates that over half had performed as primary action NCO;

** indicates that two-thirds or more had performed as primary action NCO.

Table 6
Source Materials for Training in Units
Listed in Order of Frequency of Use

1.	Army Training Programs Army Subject Schedules Army Training Tests Field and Technical Manuals
2.	Training Circulars
3.	FM 21-6 Methods of Instruction, Jan 67 FM 101-3 Staff Officers Manual
4.	Existing Instructional Documents
5.	AR 350-1 Army Training Special Service School Tests
6.	FM 21-5 Training Management, Dec 64
7.	FM 105-5 Maneuver Control
8.	Training Circular 21-5-1 Training Management

The questions on constraints on unit training produced three consistent responses:

- (1) There was a serious shortage of middle-level NCOs (E5, E6, E7) because units were only 60-70% of authorized strength.
- (2) Training facilities, aids, and devices were insufficient.
- (3) Only 50% of time could be devoted to mission-related training because of requirements to support post activities.

Desired Training

The information on training desired by incumbents on the 12 activities showed no consistent trend. Ordinal priorities assigned by battalion commanders and S3s correlated near zero. Rank-order coefficients averaged $-.07$ for battalion commanders and $-.05$ for S3s, indicating a lack of agreement within either group.

DETERMINING RELEVANCE AND QUALITY OF SCHOOL INSTRUCTION ON TRAINING

The relevance and quality of school instruction on training for unit trainers was determined in three steps:

- (1) Army schools were canvassed by telephone to identify relevant programs of instruction.
- (2) Selected Army schools were visited to verify canvass findings and to collect course materials.
- (3) Course materials were analyzed to estimate the quality and relevance to unit trainers of school instruction.

TELEPHONE CANVASS PROCEDURE

Fifteen schools and 38 courses in 10 CONUS and two USAREUR installations were canvassed. Interviewers were retired Army officers. They contacted the personnel at each school who, in their judgment, could give authoritative information about a given program of instruction. Typically, the interviewers obtained general information from the office of the Director of Instruction. For detailed information they were referred to senior instructors or other staff members responsible for the pertinent block of instruction.

Instructions for telephone interviewers and the forms for recording survey data are included as Appendix B. The principal questions pertained to:

- (1) Amount and type of instruction on Training Management (TM) and Methods of Instruction (MOI).
- (2) Unit assignments for which soldiers in the course were being trained—by doctrine.
- (3) When the block of instruction was last revised.
- (4) Publications used as bases to develop the block of instruction.

Results of Telephone Canvass

Of the 38 courses involved in the canvass, 21 contained instruction on MOI and TM, as shown in Table 7. That information is summarized in Table 8 by type of course available to combat arms personnel.

Table 7

**Summary of Training-Relevant Instruction Provided in
Combat Arms/Combat Support School Programs Surveyed**

Program	School	Course Length (Weeks)	Hours of NOI	Hours of Tng. Mgt.	Instruction last Revised	Basis of Instruction ^a							
						Com Reg 350-100-1	Com Reg 350-10	TRD 21-5-1	FM 21-5	FM 21-4	AR 350-1	DYS TNG REPT	Other
Command and General Staff	Command and General Staff College	38		12	1971			3	3				
Officer Advanced	Armor School	38		28	1972			2	2			2	1
	Infantry School	36	13	65	1973	3							2
	Field Artillery School	39½	19	4	1973			2	2	2	2		2
	Air Defense School	36	9	2	1972	3	2	2	2	2			
	Engineer School	34		3	1973	2		3	2	2			
	Signal School	39	1	2	1973			2	2	2			
	Military Police School	35	15		1973					3			
Officer Basic	Armor School	12		4	1972			3					
	Infantry School	12		4	1973	2							3
	Field Artillery School	12	5		1973						2		
	Air Defense	9	5		1972	3				3			
	Engineer	9		2	1973			3					
	Military Police	9	5		1973					3			
Officer Candidate	Infantry	22	13	3	1973	2							
Senior NCO	Sergeants Major Academy	22		24	1973			3	3				1
Advanced NCO	Armor	12		15	1972			2					1
	Infantry (11F)	12	16	10	1973	2	2						
	Infantry (11G)	11	16	6	1973	2	2						
	Field Artillery	12	11	2	1971				3	3			
	Air Defense	15	8	4	1972	3		3		3			
	Signal	9	17		1972				1	1			3
Basic NCO	Armor	12	19		1972					3			
	Infantry	12	16	6	1973	2	2						
	Air Defense	11	17	2	1972	3		3	3	3			
	Signal	9	14½		1972				1	1			3
NCO Academy Leadership	1st Army NCO Academy	4	34½	3	1972				1	2			
	3rd Army NCO Academy	4	37	1	1972				3	2			
	5th Army NCO Academy	4	37		1972					3			
	6th Army NCO Academy	4	37		1972					3			3
	7th Army NCO Academy	4	34		1973					3			
NCO Academy Basic Leadership	1st Army NCO Academy	1	2		1972				1	2			
	5th Army NCO Academy	1½	10		1972					3			
	6th Army NCO Academy	1	11		1972					3			
Company Commanders Course	USAREUR Combat Support Training Center	2		7	1973			3	2	1	2		3
Training Management Course	USAREUR Combat Support Training Center	1	1½	36½	1973			3	2	1	2		3
Basic Instructor Training	USAREUR Combat Support Training Center	3	80		1973	3		2		3	2		3
Test Workshop	USAREUR Combat Support Training Center	1	40		1973	3				3			1

^aNumber code indicates the document was considered in course development and influenced instructional content to the following extent: 3="a great deal," 2="somewhat," and 1="very little."

Table 8
Summary of Training-Relevant School Instruction Reported as Available to
Combat Arms Officers and NCOs

Type of Course	Number of Courses	Course Length (weeks)		Hours of MOI		Hours of TM		Programs Under Revision
		Range	Average	Range	Average	Range	Average	
Officer Advanced	4	38-39	38.5	0-19	10.25	2-65	24.75	2 of 4
Officer Basic	4		12	0-5	2.5	0-4	2.0	3 of 4
Officer Candidate	1		22		13		3.0	1 of 1
NCO Advanced	4	11-15	12.5	0-16	8.75	2-15	6.75	1 of 4
NCO Basic	3		12	16-19	17.33	0-6	2.67	1 of 3
NCO Academy	5		4	34-37	35.8	0-3	.8	0 of 5

Although the classification of hours may be affected by a difference in interpreting the terms "Training Management" and "Methods of Instruction," two trends are evident from Tables 7 and 8:

- (1) NCOs received more MOI and less TM than officers.
- (2) The more advanced the course, the greater the emphasis on TM rather than MOI for both officers and NCOs.

At least one specific document was named as being used or having been used as the basis for MOI or TM instruction in each course. As indicated in Table 9, most of the blocks were based on FM 21-5, Dec 64 and FM 21-6, Jan 67, neither of which emphasizes performance-oriented training. But the fact that TC 21-5-1 was used in over a fourth of the programs indicated that schools were willing to use new guidance. Willingness to use new guidance was especially important because half of the courses (19 of 38) were reported under revision, including eight of the combat arms-related programs.

The telephone canvass also revealed an apparent discrepancy between policy and practice with respect to the level of the school program which trains company commanders. The U.S. Army Training and Doctrine Command (TRADOC) (CONARC, at the time of the canvass) policy is that officers are prepared by branch basic courses for command through company level, and advanced courses prepare them for battalion level positions. In practice, however, many company commander positions are filled by graduates of advanced courses.

ON-SITE SCHOOL SURVEY PROCEDURE

After the telephone canvass, 10 courses were selected for a follow-up survey. The purposes of the survey were to verify information from the canvass and to collect

Table 9
Publications and Frequency of
Use in Training-Relevant
Instructional Development

Publication	Number of Courses ^a
FM 21-6 (Jan 67)	25
FM 21-5 (Dec 64)	18
CON REG 350-100-1	13
Training Circular 21-5-1	10
AR 350-1	5
CON REG 350-10	3
Dynamic Training Report	1
Other (Misc. Ars, FMs, and local guidance)	14

^aBased on a total possible of 38.

With the exception of the Infantry School, the survey was completed by on-site interviews with curriculum planners for each course. The instructions for the interviews are included as Appendix C.

ANALYSIS OF SELECTED COURSES

Lesson plans, student advance sheets, programs of instruction, and tests for each of the 10 selected courses were analyzed to determine the relevance to unit-trainer need and the quality of instruction.

Relevance was measured by determining the instruction time devoted to each of the 12 unit training activities (Table 1). Each hour or fraction of an hour was marked as pertaining to one or more of the activities. When instruction was judged relevant to more than one activity, the time was divided to reflect the amount of time devoted to each activity. Time given to broader topics, such as Army training policy, was labeled "general."

Quality of instruction was estimated by evaluating the training methods used. This indirect approach was necessary because proficiency test data were not available. The evaluation was based on the assumption that, to be effective, a block of instruction should include clearly stated training objectives, presentation of essential information (including demonstration of behavior to be learned), guided practice, and testing on criterion performances. Credit was given if information was presented, guided practice was conducted, or learners were evaluated. Incomplete credit was given if only part of a topic or behavior was presented, practiced, or evaluated.

RESULTS

The type of program and number of instructional hours devoted to MOI and TM for courses selected for analysis is presented in Table 10. The hours of relevant instruction in Table 10 were considerably less than was indicated in the telephone canvass. This discrepancy is due to confusion as to whether a particular block of instruction pertains primarily to training or to another aspect of a job. For example,

course materials for further analyses. There were six guidelines for selecting courses for follow-up:

- (1) All four combat arms should be represented.
- (2) Programs should feed TOE positions.
- (3) Priority should be given to programs offering the most training-related instruction.
- (4) Priority should be given to the most recently revised programs and to those that applied the current Army training doctrine.
- (5) Duplication of programs of instruction should be avoided.
- (6) The courses should be given in schools located at the sites of units to be surveyed.

"Effective Speaking" was reported initially as MOI for two programs. During analysis the instruction was found actually to pertain to preparing and giving briefings. Also, a large block reported during the canvass as TM was found to be a brigade level exercise that devoted no more than three hours to TM. For these reasons, the hours shown in Table 10 should be considered more accurate than those shown in Table 7 as estimates of the amount of instruction available in TM and MOI.

Table 10
Selected School Instruction Analyzed for Relevance to
Unit Training Requirements

Type of Program	Number of Courses	School ^a	Instructional Hours of Training
Officer Advanced	2	A	18
		B	15
Officer Basic	2	A	4
		B	6
Officer Candidate	1		22
NCO Advanced	2	A	10
		B	13
NCO Basic	2	A	19
		B	7 3/4
NCO Academy Leadership	1		42

^aThe letters "A" and "B" represent schools studied in a category. A letter has no consistent referent across categories.

The relationship between course content and unit training activities is shown in Table 11. The scope of relevant instruction was broader in officer advanced courses than in other programs. Except for the officer advanced courses, the bulk of instruction was on planning and conducting training. In fact, Table 11 shows a very narrow emphasis in courses other than officer advanced. Still, on the surface, instruction on training conducted within the sample courses was found relevant to at least some of the 12 unit training activities.

The analysis of quality of instruction indicated heavy reliance on lecture techniques. Information was almost always presented—as it should be—but, too often, lecturing was the only instructional technique used. Table 12 indicates how rarely soldiers were required (or allowed) to practice the complete task under close supervision. Usually, instructors required only one soldier to perform. Similarly, soldiers were rarely evaluated, formally or informally, on their mastery of the training activities. The absence of effective practice and evaluation was especially pronounced for training management activities.

The most effective techniques were used in training soldiers to conduct training (Activity 11). In the NCO Academy, one of the NCO advanced courses, the Officer Candidate School courses, and one of the officer basic courses, soldiers received necessary information on the task and performed the full task under supervision. Closer analysis of the content in those courses, however, revealed that the substance of instruction was almost exclusively on how to lecture or conduct a conference. Ironically, the most effective use of the techniques of performance-oriented training was to teach soldiers how to deliver non-performance-oriented training.

Table 11

School Instruction Given on Unit Training Activities

Instruction	Type of Course									
	Off Adv		Off Bas		Off Can	NCO Adv		NCO Bas		NCO Acc
	A	B	A	B		A	B	A	B	
Hours in Block	18	15	4	6	22	10	13	19	7 3/4	42
Activity										
1. Designate Tasks		x				x				
2. Identify Conditions		x								
3. Designate Standards		x								
4. Prepare Tests	x				x					
5. Evaluate Proficiency		x	x							
6. Document Proficiency										
7. Identify Resources	x									
8. Commit Resources	x									
9. Schedule Training	x	x								
10. Plan Training	x	x			x	x		x	x	x
11. Conduct Training		x		x	x		x	x	x	x
12. Check Proficiency										

Note. x indicates one hour or more of instruction.

An encouraging result of the analysis was the discovery of performance objectives for managing and conducting training prepared by the Infantry School. Those objectives were considered especially important in light of the number of courses being revised. It was, and remains, likely that implementing performance-oriented training to attain those objectives would enhance greatly the impetus toward solving unit training problems.

IDENTIFYING TRAINING NEEDS OF UNIT TRAINING PERSONNEL

Since it was beyond the purview of this project to measure directly the job proficiency of unit trainers and training managers, the approach used to identify training needs was to relate responsibilities of incumbents in TOE positions to available training in the service schools which prepares soldiers for those positions. Results of that effort are shown in Tables 13 and 14.

Table 13 is based on the assumptions suggested in the school survey that, despite TRADOC policy, company command positions are filled by graduates of officer advanced courses. Table 14 is based on the assumption that those positions are filled by basic and advanced course graduates. In both tables, unit training requirements are indicated by the proportion of incumbents responsible for each training activity and the proportion which had actually performed each activity. If a course included at least one hour of instruction related to an activity, an X was placed in the column.

Table 12

Content (HRS) and Training Method (MTH) Analysis of School Programs*

Unit Training Activity	OFFICER ADVANCED				OFFICER BASIC				NCO ADVANCED				NCO BASIC				NCO ACADEMY	
	School A		School B		School A		School B		School A		School B		School A		School B		School A	
	HRS	MTH	HRS	MTH	HRS	MTH	HRS	MTH	HRS	MTH	HRS	MTH	HRS	MTH	HRS	MTH	HRS	MTH
1. Designate Tasks	4	IP	1	IP	4	?	?	?	4	I	1	IP						
2. Identify Conditions			1	IP	4	?	?	?	4	IE	4	IP						
3. Designate Standards			1	IP	4	?	?	?	4	IE	4	IP						
4. Evaluate Proficiency	4	IP	14	?	14	?	?	?	4	I								
5. Prepare Tests	24	IP			4	?	?	?	14	IFE								
6. Document Proficiency					4	?	?	?										
7. Identify Resources	24	IP	4	?					4	I	4	I						
8. Commit Resources	14	IP	4	?					4	I								
9. Schedule Training	24	IP	1	?	4	?	?	?	4	I	1	IP	4	I	4	IE		
10. Plan Training	54	IP	24	IP	4	?	?	?	4	IP	34	IP	4	I	84	IFE	44	IE
11. Conduct Training	1	I	1	IP						IFE			104	IE	94	IFE	24	IFE
12. Check Proficiency	4	I							4	I	4	I			4	I		
General	2	IP	44	I					3	I	4	I			4	IE		
TOTAL HOURS	18		15		4		6		22		10		13		19		74	42

NOTE: Training method: I = Information Presented; P = Practice Session; E = Evaluation; ? = Unknown. Underline indicates method was judged to be performed completely; lack of underline indicates partial performance.

Table 13

**School Instruction Received by Target Groups on Unit Training
Performance Requirements: Target TOE Positions
Grouped Under Assumption 1**

Activity	Target Groups					
	Off Adv		Off Basic	NCO Adv		NCO Basic
	Bn S3	Co CO	Plt Ldr	Ops Sgt	Plt Sgt	Sq Ldr
School:	A	B	A	B	A	B
1. Designate Tasks		X	---	---	X	---
2. Identify Conditions		X	---	---	---	---
3. Designate Standards		X	---	---	---	---
4. Evaluate Proficiency		X	X	---	---	---
5. Prepare Tests		X	---	---	---	---
6. Document Proficiency			---	---	---	---
7. Identify Resources		X	---	---	---	---
8. Commit Resources		X	---	---	---	---
9. Schedule Training		X X	---	---	---	---
10. Plan Training		X X	---	X	---	X X
11. Conduct Training		X	---	X	---	X X
12. Check Proficiency			---	---	---	---

Note. --- = Over half were allocated responsibility.

---*--- = Over half had performed as primary action officer or NCO.

----- = Two-thirds or more had performed as primary action officer or NCO.

X = One hour or more of school instruction presented.

In only one instance did school training address an activity performed by less than half the incumbents. However, both tables show a lack of instruction pertaining to some of the frequently performed activities.

In considering only the amount of instruction available, three needs were identified:

(1) Instruction on TM suitable for squad leaders, platoon sergeants, and operations sergeants.

(2) Instruction on TM suitable for platoon leaders and company commanders who have not attended the advanced course.

(3) Melding of instruction to close gaps on TM suitable for battalion commanders, battalion S3s, and company commanders.

When quality of instruction was considered, a fourth need, similar to the third, was identified. That need was for a performance-oriented approach to presenting instruction on TM for advanced officers.

When content of instruction was considered, a fifth need was identified. It was for instruction on how to conduct performance-oriented training suitable for all levels of the duty positions but with emphasis on needs of the company commander.

Table 14

**School Instruction Received by Target Groups on Unit Training
Performance Requirements: Target TOE Positions
Grouped Under Assumption 2**

	Target Groups											
	Off Adv				Off Basic				NCO Adv			
	Bn CO		Bn S3		Co CO		Co CO		Ops Sgt		Plt Sgt	
	A	B	A	B	A	B	A	B	A	B	A	B
School:												
1. Designate Tasks		X							X			
2. Identify Conditions		X										
3. Designate Standards		X										
4. Evaluate Proficiency		X			X							
5. Prepare Tests		X										
6. Document Proficiency												
7. Identify Resources		X										
8. Commit Resources		X										
9. Schedule Training		X	X									
10. Plan Training		X	X						X			
11. Conduct Training		X				X				X	X	X
12. Check Proficiency												

Note: — — — = Over half were allocated responsibility.

— — — = Over half had performed as primary action officer or NCO.

— — — = Two-thirds or more had performed as primary action officer or NCO.

X = One hour or more of school instruction presented.

SELECTING THE LOCATION FOR INITIAL COURSE DELIVERY, TARGET GROUP, AND COURSE TOPIC

Following identification of the five needs for revamping instruction in TM and MOI, it was necessary to narrow the scope of the problem to manageable proportions. Three factors were considered in determining the nature of the experimental program of instruction.

The first factor was the location of training. The issue to be decided was whether the experimental program should be delivered in a service school or in a field unit. Delivery in a field unit had three advantages. First, such an approach would have a more immediate impact on unit training. Second, practice could be made more realistic since trainees would be unit personnel learning actual job tasks. And third, managers and trainers could be trained in their normal interactive context. Delivery in a service school also appeared to have three advantages. First, it would be more efficient because more soldiers could be trained in a single round of instruction. Second, trainees would be more receptive in a school environment to what may seem to be unconventional training concepts and methods. Third, it would be easier to sustain the instruction in an effective form if it were presented in a school.

The second factor to be considered was the target group for the instruction. Selection of a target group depended largely on selection of the location of training. If the program were to be presented in field units, the target group would have to include a cross-section of personnel—battalion S3 through squad leader; otherwise, it would be too expensive to present as many as four separate courses. If the courses were to be initiated in a school, the target group would obviously be determined by the school and course selected. The survey results indicated that although soldiers in any duty position studied would benefit from the instruction, the target group likely to benefit most was company commanders. By policy, the company commander positions are filled by officer basic course graduates.

The third factor to be decided was the substance of training. Although TM and MOI cannot be entirely separated, full emphasis on both would not be required for a given target group. For example, TM should be emphasized more in advanced courses than in basic courses.

The final decision on these three questions was reached during two meetings. During the first meeting, research team personnel and CATB representatives reached these conclusions:

- (1) A service school would be the preferred location for introducing the experimental program of instruction. Immediacy of impact was traded for a sustained long-term training program for unit trainers.
- (2) The Infantry School would probably be the most productive location for implementing the course. As TRADOC proponent for TM and MOI, the Infantry School had made a major, obvious commitment to performance-oriented training.
- (3) The target group for the initial presentations of the course should be students in the Officer Basic Course. In that way it would be possible to insure that potential company commanders would receive the instruction.
- (4) The program of instruction should focus on conducting performance-oriented training (MOI) with some emphasis on preparing objectives and performance tests (TM). Such a program would be relevant to all the duty positions studied and adaptable to any school program.

In a second meeting, Infantry School representatives agreed with all but one of the conclusions. The School had recently revised a four-hour block of instruction on TM in

the Infantry Officer Basic Course and did not want to tamper with it. It was finally decided that the prototype UTRAIN course would focus only on planning and conducting performance-oriented training.

DETERMINING CONSTRAINTS ON PROGRAM DESIGN

During the meeting with Infantry School representatives, five constraints were agreed upon:

- (1) The program had to accommodate a class of 150 officers.
- (2) The program had to be as short as possible, not to exceed 14 hours. (Later, the time was reduced to 10 hours because the maximum of 14 hours had to accommodate the four-hour block of instruction on TM developed by the Infantry School.)
- (3) Videotape recording and playback equipment would be available.
- (4) No major expense could be allowed for equipment or supplies.
- (5) The program had to exemplify the principles of performance-oriented training.

INSTRUCTIONAL PROGRAM DEVELOPMENT

Based on the decisions reached after the analysis of the survey data, work began on preparing the pilot course. The course was developed by:

- (1) Preparing the course outline.
- (2) Selecting practical exercise tasks.
- (3) Testing and revising the course.
- (4) Implementing the course.

PREPARING THE COURSE OUTLINE

The objective of the course was:

Given a training objective, source material, necessary equipment and four to 11 trainees, soldier will conduct performance-oriented training so trainees master the objective within the shortest possible training time.

To accomplish that objective soldiers had to master four enabling objectives. As an instructor each soldier had to:

- (1) Adapt training to the specific training objective.
- (2) Effectively and efficiently present information and demonstrate behavior to be learned.
- (3) Get trainees actively involved in the learning process.
- (4) Conduct performance testing to measure trainee mastery and evaluate training effectiveness.

A draft course outline was prepared based on the training objectives and an available time of 10 hours. The initial course outline was informally revised on a continuing basis, based on evaluation, experience, and comments of students and observers. The final course outline is contained in the separate publication available from TRADOC.

A synopsis of the instructional topics in the course and their evolution follows.

INTRODUCTION AND COURSE ORIENTATION

The introduction is kept as brief as possible. During this time the instructor tells students the course objective and the activities they will be involved in during the course, and stresses the importance of the practical exercise period.

PRINCIPLES AND DEMONSTRATION OF PERFORMANCE TRAINING

This section is based on six principles of performance-oriented training. (See Table 15.) A list of these principles is given each student and the instructor describes briefly the most obvious implications of each principle. Then students watch a videotape of three training situations. After each situation they identify times when a principle was applied or violated. One situation violates all the principles, one applies some principles but lacks effective coaching and testing, and the third applies the principles. During the student-generated discussion, the instructor focuses attention on the specific principle which is applicable.

Table 15

Principles of Performance Instruction

1. Present only the information students must know to perform the tasks adequately and safely.
2. Present the necessary "how to" information only when students need it for task performance.
3. Require students to apply the "how to" information immediately in "hands on" task performance.
4. Permit each student to learn each step and develop his skill at his own pace.
5. Aid students' learning by coaching them.
6. Establish quality control by administering performance tests reliably.

The original stimulus for the discussion was a videotape on performance-oriented training produced at Fort Ord, California (Videotape No. 9-10-71, "Performance Training"). While this tape presented a good introduction to performance training, the training situations portrayed did not adequately reflect the desired teaching points in the instructional outline. In addition, this tape was to be used by the Infantry School in its introduction to performance training in the training management block that was to precede the UTRAIN block. Therefore, HumRRO researchers developed videoscripts and videotaped three training situations with the support of the Television Branch, TASO, Fort Knox, Kentucky. These black and white tapes were used during developmental phases of the course and into the implementation phase. Although they fully supported the material in the course outline, these tapes were designed only to be developmental. After a trial presentation the scripts were revised and provided to the Infantry School. Personnel from Brigade/Battalion Operations Division (BBOD) of the Infantry School, supported by the TV Branch, TASO, Fort Benning, produced color tapes which appear in the final version (UTRAIN Series #0617, #0618, #0619, #0643).

DEMONSTRATION OF HOW TO DEMONSTRATE

This section was designed to illustrate one of the most crucial aspects of performance training—conducting a proper demonstration. Seven principles were formulated that lead to an effective demonstration (Table 16). At the start of this period, each student is given a piece of string six inches long and is shown a knot that he is expected to tie. Because this knot (which has been variously called a half-hitch, cow-hitch, and hasty-hitch) can be tied easily in a number of different ways, the instructor emphasizes that the knot must be tied following a fixed procedure. The instructor then directs the students to follow his procedure in tying the knot. Because the instructor violates several principles of effective demonstration, students are unable to tie the knot. Discussion follows as to why individuals were unable to perform the task. Their responses elicit most of the seven principles of effective demonstration.

These principles are listed as positive statements and may either be written on a chalkboard, listed on a venetian blind, or uncovered individually using an overhead projector for larger classes.

The task is again demonstrated, applying the principles, and most of the students are able to master the task within two or three minutes. Individual or peer coaching is used to insure that all students master the task.

Table 16

Principles of Effective Demonstration

-
1. Demonstrate from students' viewpoint.
 2. Carefully explain each step as you demonstrate.
 3. Emphasize key points.
 4. Require students to perform as you demonstrate.
 5. Use words students can understand.
 6. Be sure students can see you.
 7. Be sure students can hear you.
-

The string demonstration was developed early and was arrived at following the criteria that governed all of the UTRAIN developments. To support the training being presented, a task was needed that was unknown to students and was complex enough to illustrate the difference between effective and ineffective demonstration. Not only did the task have to be inexpensive but the equipment needs had to be negligible. Most important, the task had to be one that all students could actually attempt rather than just observe. *Only by experiencing their inability to follow the instructor's demonstration are students able to identify the causes of their failure.*

The string task elicited much reaction, particularly among class observers and personnel who were not participating in the course. The main objection to the task was that it was not appropriate for a military class. Some of the objection was undoubtedly due to misunderstanding of the purpose of the task. Efforts were made to find a task that was military-oriented, but none was found that contained the combination of complexity, availability, and effectiveness. The task was therefore retained.

PHASES OF PERFORMANCE TRAINING

This section was designed to illustrate how performance training is delivered as a total package. The emphasis is on the four phases of performance training: demonstration, walk-through, practice, and testing. The vehicle used for this section is teaching students to fold a paper box out of a 6" X 8" piece of paper.

Students are told the training objective, which is to fold a paper box within two minutes. The instructor demonstrates the task and students perform each step with the instructor. During the walk-through, the instructor tells students when and how to perform each step but does not show them. The instructor actively monitors the class, assisting and coaching as required. During individual practice, students practice the task while the instructor observes all practice and coaches as required. Students who have mastered the task are paired with individuals who are having difficulties. Practice continues until students are ready to take the test. The instructor then administers a performance test.

The procedure requires approximately 15 minutes, and almost all students are able to pass the test. The instructor then reviews the phases the students participated in, emphasizing that each phase is flexible and must be based on student progress.

The mastery of this particular task is, of course, unimportant. The purpose is to present the training phases. By using a task that is in itself irrelevant, student attention is concentrated on that purpose. This task meets the criteria of being new to the students, inexpensive, having negligible equipment requirements, and fulfilling the task objectives. Equally important, it allows all students to participate. Like the string task, the box folding was the subject of some controversy, and despite efforts to find a substitute military task, the box folding was also retained.

PERFORMANCE TESTING

Performance testing became the subject of a special section because of its unique problems and because the inclusion of performance testing as a part of instruction was a change from traditional instructional techniques. Students are given a sample BCT performance test and are taught how to read a performance test to obtain their teaching objective, standards, equipment requirements, and conditions. Important variations in testing, such as individual vs. group testing, and product scoring vs. process scoring, are discussed.

REVIEW OF THE PERFORMANCE TRAINING PROCESS

The review of the process is accomplished by the students observing a performance training situation and evaluating the training following a critique checklist of instructor proficiency.

Originally, the training situation (which is disassembly and assembly of the caliber .45 pistol) was presented live to a trainee who was not previously trained on the task. While this was beneficial in that the students were evaluating an actual class, time and equipment constraints made this method of presentation impractical; therefore, the videotape of an instructor training four trainees was eventually substituted.

PREPARATION TO INSTRUCT

This period starts the practical application of the preceding section. Students are divided into equal groups and each student is assigned a task on which he will conduct training. Students are given a lesson plan developed in accordance with revised FM 21-6, a performance test, reference material (FM or TM), and all equipment required by the lesson plan or test. Students are given approximately two hours to prepare for their class. They are required to do the preparation alone, but the instructor is available if help is needed. Two hours were found to be enough time to prepare the presentations.

PRACTICE INSTRUCTION

The last five hours of UTRAIN are considered the most important. During this time, each student presents instruction on his assigned task.

Each group of approximately 10 students is divided into students and evaluators. Originally, the group was divided with four individuals acting as trainees and five as evaluators. During tryouts, however, it was found that the most beneficial role for the student, aside from acting as an instructor, was to perform as a trainee, so the ratio was adjusted to provide six trainees and three evaluators. All students are rotated in positions to provide an equal amount of time in each role. Each group is controlled by a moderator who should be knowledgeable of the UTRAIN principles and the teaching points to be applied to each student task. However, the moderator does not conduct the critique—that is done by the evaluators and trainees. The moderator only insures that important points are made and that the session flows smoothly.

SELECTING PRACTICAL EXERCISE TASKS

Selecting tasks for the student practical exercises proved to be a very difficult problem of the developmental work. There were four criteria for the practice tasks:

- (1) Be short. An average time limit of 20 minutes was established as desirable to keep the course within the time limit. To accomplish this, tasks were selected that could be accomplished in from 15 to 30 minutes (including critique). "Short" tasks were then paired with "long" tasks to allow short breaks to be taken during the practice.

- (2) Select new tasks. An important aspect of UTRAIN is that student instructors actually teach other individuals to do a task, not merely go through the motions of instruction. Only in this way can a student-instructor be evaluated on how he reacts to feedback from trainees. Thus, tasks had to be selected that would be unknown to most lieutenants attending the Officer Basic Course.
- (3) Have minimum equipment requirements. The task supporting materials had to be available in relatively large quantities to facilitate practice of large groups simultaneously. Equipment procurement costs were, therefore, a factor. Additionally, sensitive items of equipment, such as weapons, were ruled out because of control problems. Finally, the Infantry Officer Basic Course (IOBC) was to be taught in a classroom setting which ruled out field or outdoor tasks.
- (4) Be relevant to the military. It was necessary that the tasks selected be similar to the types of tasks students would encounter in a unit. Unlike the string and box tasks, the practical exercise tasks had to be approached from a military setting. Use of any other type of task would create an unrealistic situation for the student and would not facilitate the transfer of skills learned.

The 15 tasks finally selected are listed as Table 17. The list represents the types of tasks that are typically encountered in units. It includes tasks that are manipulative and tasks that are cognitive. There are examples of tasks with fixed outcomes as well as tasks with variable outcomes. Some tasks on the list have a product that can be evaluated, others must be evaluated by observing the process. The implications of each type of task are stressed by the moderator during the critique periods.

Table 17

Practice Instruction Tasks and Manuals

Task	Manual
Demonstrate left-side parachute landing fall	TM 57-220
Determine charge for mortar round	FM 23-91
Determine charge to cut steel I-beam	FM 5-25
Fold map sheet for use during an extended patrol*	FM 21-26
Fold U.S. Flag*	FM 22-5
Give dismounted arm and hand signals*	FM 21-60
Give mounted arm and hand signals*	TM 21-306
Issue initial fire commands for tank	FM 17-12
Measure resistance with a multimeter*	TM 11-6625-366-15
Perform ready positions of riot baton manual of arms*	FM 19-15
Prepare a written message on a message form	FM 21-75
Splice field wire with expedient splice	FM 24-20
Tie basic bowline, bowline on a loop, and three-loop bowline	FM 31-72
Tie rappel seat*	FM 31-72
Transmit location element of call for fire	FM 6-40

Note. * indicates tasks that can probably be taught in less than 15 minutes.

A shortcoming of the UTRAIN course is that a student cannot become a proficient performance instructor after only one practice exercise, but time constraints on the prototype course to be implemented in IOBC did not allow multiple sessions. Discussions were held with the Infantry School as to the possibility of the students functioning as instructors during short periods of instruction in other performance subjects taught during IOBC. While this was desirable, it was not feasible due to the large number of students involved, and this shortcoming remains in the final course. However, in other applications where more time is available, additional practice exercises should be included.

TESTING AND REVISING THE COURSE

The course was first taught by instructors from the research staff to enlisted personnel at Fort Knox. This was followed by four trial presentations—two conducted at Fort Knox, and two at Fort Benning. Students were lieutenants attending the Armor or Infantry Officer Basic Course. Observers at the trials included various staff representatives from the Armor and Infantry Schools and a representative from CATB. Students were debriefed following each class, and the comments of observers were obtained.

Reaction to the String and Box Exercises. The student comments were wholly favorable regarding these exercises. Student opinion was that the tasks aptly demonstrated the intended principles and were enjoyable as low pressure diversion from military-type tasks.

Use of Programmed Instruction Text. Students were opposed to the suggestion of presenting the course in programmed instructional text and urged retention of the present format for presentation.

Continued Practice. All students agreed that more practice training sessions were needed. Consensus was that a minimum of one more was required and two or three more were desirable to attain proficiency.

Use of Other Practical Exercise Tasks. No criticism of the tasks used was expressed. Despite their acceptance of the string and box exercises, students expressed the opinion that all the practical exercise tasks should be military tasks.

Use of Student-led Critiques. Students agreed on the requirement for a trained moderator to guide the critique sessions and rejected the idea of a student-led critique.

Time Requirements. With a group of 10 students, the time for practical exercise presentation was established at five hours, and the time for the entire course, including preparation, was established at 10 hours.

Videotapes. The new first-generation videotapes were used during the second trial and found to be a significant improvement. Based on comments on the tapes, the scripts for the videotapes were revised and submitted to the Infantry School for final production.

Tasks Added. To counter the possibility that some tasks may have been learned by students, and to add to the flexibility of task selection, five additional tasks were developed for a total of 15 tasks discussed earlier.

Lesson Plans. Lesson plans were added for all practical exercises. Prior to this the student had been provided only a performance test. The addition of lesson plans was to insure that the student's approach reflects what he learned in the USAIS Training Management instruction.

Moderator Guidelines. To aid new instructors who were to serve as moderators during the practical exercises, moderator guidelines were prepared. These consist of a suggested general approach for the novice moderator as well as specific points to note in each practical exercise task.

Task Distinction. To provide a clearer distinction between fixed-procedure-fixed-outcome tasks and fixed-procedure-variable-outcome tasks, the script was revised to emphasize the differences. This distinction is important for the military instructor, when he analyzes his training objective, to decide how to approach his instruction.

Following the final trial at Fort Benning, the Infantry School assistant commandant directed that the UTRAIN course be implemented in IOBC within 45 days.

IMPLEMENTING THE COURSE

The UTRAIN course was implemented in IOBC 2-75 in August 1974. Instructors were from the Brigade/Battalion Operations Department (BBOD). The characteristics of the class and the instructional approach were as follows:

The class consisted of 200 students and was divided into four sections of 50 officers each. Each 50-man section remained together for the first four hours involving presentation, demonstration, discussion, and introduction to the practical exercises. Students had at least overnight to complete preparation as outside work.

Practical exercises were accomplished in 10-man groups, 100 students at a time. Six hours were allocated for the practical presentations.

The first four hours of the block were conducted by two primary instructors. Moderators for the practical exercises were selected from available members of the Infantry School faculty.

To assist in implementation, research personnel observed instructor rehearsals, assisted in briefing moderator personnel for the first class, and observed all aspects of that class. Several minor problem areas were observed, primarily as a result of the large class size and the unfamiliarity of some of the moderator personnel with UTRAIN. These areas were discussed with BBOD personnel, and adjustments were made in delivery techniques to compensate for the class size. Additional emphasis was also placed on orientation of new moderator personnel.

In January 1975, the Infantry School obtained TRADOC approval of the UTRAIN course for inclusion in the IOBC curriculum. Subsequently, the Infantry School, as TRADOC proponent for methods of instruction, distributed UTRAIN materials to all TRADOC service schools.

EVALUATION

Informal evaluations of the UTRAIN course were conducted throughout its development. Participant and observer reactions provided a continuing basis for course revision. But once it had reached its final experimental form, the course was subjected to more formal evaluation. There were three aspects to the evaluation:

- (1) The opinion of Infantry School observers.
- (2) A survey of officers in the first IOBC class to complete UTRAIN.
- (3) A comparison of training effectiveness of UTRAIN instructors with non-UTRAIN instructors.

OBSERVER OPINION

As mentioned previously, trial presentations of UTRAIN at the Infantry School were observed by representatives from the Directorate of Training and BBOD. The observers were responsible for determining whether the UTRAIN course would prepare IOBC graduates to conduct effective performance-oriented training. The fact that they recommended implementing UTRAIN in IOBC indicates that their opinion of the course was favorable.

The opinion of expert observers is, by definition, subjective, and constitutes only an informal evaluation. However, their judgment was the most important indicator of whether the experimental program of instruction met their goal. That goal was a block of instruction, suitable for inclusion in officer basic courses, that would prepare officers to conduct performance-oriented training in units.

SURVEY OF COURSE MEMBERS

To gather further opinions on the effectiveness of the UTRAIN instruction, members of BBOD surveyed the first class to complete the block after it was implemented in the Infantry School. The first class was composed of 197 second lieutenants, most of whom were graduates of the US Military Academy. A questionnaire was administered to the officers after they completed the practical exercises. Since that was on Friday before a three-day weekend, BBOD members expected a slightly less enthusiastic response than usual. The results of the survey are presented in Appendix D.

The first five questions related to the effectiveness of the three hours devoted to presenting necessary information. Most of the students (78%) considered the material meaningful to their anticipated career development, and nearly all of them (98%) thought the material was presented effectively. In evaluating the effectiveness of the controversial string and paper box exercises, most course members (82%) rated the exercises as at least "fairly effective": the modal rating (33%) was "extremely effective."

Regarding the full 10-hour block, 62% indicated the instruction was better than MOI previously received, 24% indicated that it was about the same, and 14% thought it was

poorer. (MOI available to cadets was not analyzed during the problem definition phase.) A vast majority of students (90%) rated the overall instruction as effective in meeting the objective.

The Chief of BBOD interpreted the survey results as an endorsement of the effectiveness and suitability of the UTRAIN course.

COMPARATIVE STUDY

To supplement student opinion of the course, a small empirical study was designed in an effort to obtain "hard" data on course effectiveness. The purpose of the study was to compare the results of training conducted by UTRAIN instructors with that conducted by graduates of a traditional MOI course. The basis of the comparison was to be the performance of students trained by the two instructor groups.

Subjects

UTRAIN Instructors. Eight NCOs from a tank battalion of the Armor School Brigade served as UTRAIN instructors. Seven were tank commanders and one was a wheel vehicle mechanic. None had had experience as an instructor, although two had had previous instruction in MOI—20 hours in both cases. Seven of the eight men held the rank of E5, and one was an E2, Acting Sergeant. The group averaged slightly over three and a half years in service.

Non-UTRAIN Instructors. Seven NCOs, ranging in grade from E5 to E7, and one 2LT served as Non-UTRAIN instructors. These men had just completed an 80-hour BCT Committee Group Instructor Training Course consisting of 64 hours of instruction in conference techniques and 16 hours of performance-oriented training techniques. Four of the men were assigned to Committee Group, two were BCT Drill Instructors, one was an AIT Drill Instructor, and one was a unit clerk. Four had completed 60 hours previous MOI (NCO Academy and Drill Sergeant School), two had completed NCO Academy MOI only, and one had had ROTC MOI. Previous instructor experience ranged from 12 to 96 months. The group averaged nearly eight years in service.

Characteristics of the two instructor groups are displayed in Table 18.

Table 18
Instructor Characteristics

Characteristic	UTRAIN	Non-UTRAIN ^a
Grade	7 E5, 1 E2 Acting Sergeant	2 E5, 4 E6, 1 E7, 1 2LT
Time in Service		
Range	1-5 Years	1-17 Years
Mean	3.6 Years	7.8 Years
GT		
Range	95-125	88-120 ^a
Mean	111	104 ^a

^aNo score for officer.

Experimental Trainees. Trainees for this study were 24 BCT graduates awaiting the start of 11D (Reconnaissance Specialist) and 11E (Armor Crewman) AIT. Trainees were randomly divided into four six-man groups.

Procedure

UTRAIN Instructors received the standard 10-hour block plus one additional round of practice sessions, for a total of 15 hours of UTRAIN instruction. UTRAIN and non-UTRAIN instructor groups completed their MOI training two days before the criterion test study began.

The study was conducted over two days. Eight instructors were evaluated each day. Two instructors, one from each group, reported to the test site at one hour intervals. When they reported they were briefed on the purpose of the study and given the following directions:

"During the next four and a half hours you will participate in an evaluation of instruction techniques. You were chosen for this study because you have just completed a course to make you an effective instructor. You will be told the subject you are to instruct. We will give you a manual for the subject, equipment, and a prepared performance test. You will have three and a half hours to prepare your instruction. We will provide a place for you to prepare.

"At you will instruct six soldiers on the subject, or task, that has been assigned to you. These soldiers are graduates of BCT but have not yet attended AIT. Your goal is to teach them to perform the task. They will be tested at some later time.

"Fifty minutes have been allowed for your block of instruction; however you are not being required to teach a 50 minute class. You may use as much of the 50 minutes as you feel is necessary. The goal is to prepare your students so they can perform the task as required by the performance test. You should do this as quickly as possible. Fifty minutes should be enough time for the task you will be teaching. You will be stopped if your class exceeds 50 minutes. In your class will be a monitor, but do not let his presence interfere with your class. Remember, the important thing is that your students learn the task as quickly as possible. When you feel your students know the task, simply notify the monitor.

"Once you have been assigned a task, you will not be allowed to leave or to talk with other instructors. If you have any questions you may ask then now or at any time during the preparation period."

One of four Armor AIT level tasks was assigned to each instructor:

- Plot a six-digit point of reference on a map.
- Measure distance of a route on a map.
- Place AN/PRC-77 radio into operation.
- Disassemble/assemble M3A1 submachinegun.

Each group thus prepared and conducted training on the same tasks. When tasks were assigned, an instructor was given the relevant manual and a prepared performance test for his assigned task, and was allotted three and a half hours to prepare his training.

Two six-man trainee groups participated on the first day, and two on the second day. They were rotated through training so each group received training on each task. Further, each trainee was trained by two different representatives from each instructor group. In this way the ability level of trainees was identical for each group of instructors. The schedule of instruction is given in Table 19.

A member of the UTRAIN research staff monitored each experimental class, noted instructor strengths and weaknesses, and recorded elapsed time. Immediately after each class, the six trainees were tested. NCOs assigned to the ARI Field Unit (Armor) administered a performance test (the same test available to instructors for class preparation.) Testing was conducted "blind," in that testers did not know the group identification of trainees.

Pass rates on these performance tests, along with elapsed class time, comprised the basic data for comparing performance of the two instructor groups.

Table 19
Schedule of Instruction

Day	Time	UTRAIN Instructor	Task	Trainee Group	Non-UTRAIN Instructor	Task	Trainee Group
1	1230	1	Submachinegun	A	1	Point of Ref.	B
1	1330	2	Point of Ref.	A	2	Submachinegun	B
1	1430	3	Radio	B	3	Map Route	A
1	1530	4	Map Route	B	4	Radio	A
2	1230	5	Point of Ref.	C	5	Submachinegun	D
2	1330	6	Submachinegun	C	6	Point of Ref.	D
2	1430	7	Map Route	D	7	Radio	C
2	1530	8	Radio	D	8	Map Route	C

Results

The average number of passes in the two groups was compared statistically using the Mann-Whitney *U* test. As indicated in Table 20, students trained by non-UTRAIN instructors had a higher pass rate than those trained by UTRAIN instructors. Non-UTRAIN instructors produced, on the average, one more pass per six-man class than did UTRAIN instructors. Although the difference is greater than expected, the observed *U* statistic of .117 is not significant at the .01 level.

Table 20
Number of Trainees Passing the Performance Test

Task	UTRAIN		Non-UTRAIN	
	Day 1	Day 2	Day 1	Day 2
Point of Reference	4	1	6	5
Map Route	3	2	4	4
Submachinegun	5	2	5	3
Radio	6	6	6	4
Total	<u>29</u>		<u>37</u>	
Mean	3.62		4.62	
Std. Dev.	1.80		.99	

The relative training efficiency of the two groups, as measured by training time, is shown in Table 21. Though the difference was small, Non-UTRAIN instructors used less time than UTRAIN instructors. An observed *t* of .427 indicated that the difference is not statistically reliable at the .01 level.

Discussion

The source of difference between the instructor groups lies entirely in the results for two tasks—plotting a point of reference on a map and measuring distance of a route on a

Table 21
Training Time (Minutes)

Task	UTRAIN		Non-TRAIN	
	Day 1	Day 2	Day 1	Day 2
Point of Reference	47	50	43	14
Measure Distance	39	22	34	50
Submachinegun	50	47	50	50
Radio	34	36	19	44
Total	<u>325</u>		<u>304</u>	
Mean	40.6		38	
Std. Dev.	9.16		13.44	

map. Both are cognitive tasks which, in the teaching process, put a premium on an instructor's ability to describe fairly complicated mental activities. Because the outcome varies with the conditions, such tasks also require an instructor to develop several situations for student practice. The UTRAIN course stresses both the importance of specifying and clarifying mental operations and the need to develop a variety of practice situations. The conventional MOI course emphasized neither (at least these points were not noted in the one version of the MOI course observed earlier by UTRAIN staff). Yet the non-UTRAIN instructors seemed to do a better job of specifying the key cognitive points than the UTRAIN instructors did. Also the practice situations developed by non-UTRAIN instructors seemed more effective.

This reversal of the expected outcome may be explained in two ways. One possible explanation is that conference techniques, in which non-UTRAIN instructors had received some 60 hours of training, transfer better than has been assumed to "soft-skill" performance-oriented training. The second possibility is that the experience edge held by the non-UTRAIN instructors may have contributed to their superior teaching of these two tasks. The ability to communicate effectively with AIT-level soldiers, enhanced by experience, would help an instructor identify key points to be stressed during demonstration and practice phases.

As expected, UTRAIN instructors devoted a higher proportion of time to student practice. Observations during the instructional sessions indicated that students trained by UTRAIN instructors were actively involved during the demonstration or in practice for 95% of the total training time. Trainees trained by non-UTRAIN instructors were actively involved during the demonstration or in practice for 67% of the total training time. That difference is important for two reasons: (a) it indicates that both groups applied the model addressed in their respective trainer training course; (b) it supports the suggestion made earlier in this section that the quality of the practice was more important than the amount of practice for these four tasks.

Conclusions

1. Although results of training conducted by UTRAIN graduates were comparable to those of more experienced counterparts—at least on the two manipulative tasks—this study is inconclusive on the issue of the effectiveness of the UTRAIN course. The sample is too small and diverse for a more confident conclusion.

2. Any replication of this study should include at least 16 instructors in each group, and those groups should be matched more closely for time in service and experience as an instructor. It would be desirable to focus attention on 2LTs or E5s, since they are most likely to be inexperienced instructors.

3. At least for NCOs, trainer training courses should give greater emphasis to analyzing a training objective in order to identify key points.

OTHER APPLICATIONS OF UTRAIN

As discussed previously, one reason that UTRAIN focused on conducting training was the assumption that such a course would be valuable in a wide range of situations. A major part of the UTRAIN project was devoted to studying whether that assumption was warranted.

Four applications of UTRAIN in environments other than officer basic courses were studied. These additional applications were:

- (1) As part of the curriculum for NCO courses.
- (2) As an Instructor Training Course for the faculty of schools and training facilities.
- (3) As instructor training for Reserve/National Guard trainers.
- (4) To prepare instructors to conduct element training.

NCO COURSES

During the early pilot presentations of UTRAIN, it became apparent that the course was relevant to NCO level unit trainers. After observing the first pilot presentation, the Chief of the Armor School Faculty Development Branch (FDB) recognized that relevance. As a result, UTRAIN was adapted for inclusion in the Armor School NCO Basic Course (E4, E5, E6) and NCO Advanced Course (E6, E7).

In each course the first part of the block is presented to a group of 20 to 30 soldiers. The soldiers are divided into smaller groups for the practical exercises.

Because of local resistance to the string and box tasks, the principles of demonstrating effectively and the phases of performance-oriented training are presented in a conference.

Another difference is that the review of the performance-oriented training process is conducted through a live demonstration of an instructor training one or two people to tie a rappel seat.

The practical exercise tasks are the same as those in UTRAIN with some additions. The variety of tasks has been preserved.

The Primary NCO Course (PNCOC: E3, E4) developed by the Infantry School also contains a block based on UTRAIN. The full 10 hours in that block are conducted in 10-man groups.

The principles of performance-oriented training are presented in terms of the phases of training by teaching soldiers to put the M72A2 LAW into operation. Before each phase the instructor tells them the training characteristics to watch for.

The box-folding task is used to present the principles of demonstrating effectively and to reinforce the phases of training.

Tasks for the practical exercises are manipulative rather than cognitive. Such tasks are usually relatively simple to teach and learn; therefore, the "Training to Train" block in PNCOC is the most basic application of UTRAIN. Personnel in the Infantry School Directorate of Training (DOT) who developed PNCOC are confident that this basic approach is justified by the lower rank of soldiers in the course.

It should be stressed that the impetus to include a block in NCO courses on how to conduct training came from the Armor School FDB and the Infantry School DOT. Research personnel consulted with representatives of each department on adapting UTRAIN for their situations, observed the block in the Armor School course, and made additional recommendations based on those observations. But the final form of each block was, of course, determined by the responsible department.

SCHOOL FACULTY MEMBERS

The second application of UTRAIN studied was as an Instructor Training Course for the faculty of schools and training facilities. In response to a request from the Training Division, DCSOPS, and USAREUR, research personnel presented the UTRAIN course for the benefit of training personnel in the Seventh Army Training Center and the NCO academies in Europe.

At Vilseck, Federal Republic of Germany (FRG), five workshops were presented for instructors who deliver training on procedural tasks at the Seventh Army Training Center. UTRAIN appeared to be an effective vehicle for dealing with NCO resistance to performance training techniques. That effectiveness was due largely to the fact that the range of tasks used for practical exercises demonstrated the wide applicability of the approach. However, one practical exercise presentation did not appear sufficient to assure that these soldiers would be effective performance trainers. Future use of UTRAIN as an Instructor Training Course should require at least two practical exercise presentations on dissimilar tasks.

At Frankfurt, FRG, the course was presented to senior representatives of the U.S. Army NCO academies throughout Europe. The main purpose of that presentation was to explore the UTRAIN course as a potentially valuable addition to the academies' curricula. A secondary purpose was to improve the training skills of the representatives. Initially, this audience resisted the principles of performance-oriented training. Resistance appeared to be an understandable result of as much as 17 years of experience in lecture-oriented training systems. By the end of the course, resistance was reduced but not eliminated.

The experience of presenting the UTRAIN course in Germany suggested that as performance-oriented training is implemented in new environments, resistance should be expected. The experience also suggested that UTRAIN is effective in reducing that resistance.

RESERVE/NATIONAL GUARD TRAINERS

A third experimental application of UTRAIN has been to improve the training effectiveness of Reserve/National Guard trainers. With limited guidance from HumRRO and Infantry School personnel, UTRAIN was implemented by the Georgia National Guard to introduce performance-oriented training techniques to unit training personnel. Since the course, with minor revisions, can be completed in one day, it was found well-suited for presentation during a multiple unit training assembly. A vehicle to orient reservists and National Guardsmen to performance-oriented training will be increasingly important as readiness units implement the new performance-oriented Army Training and Evaluation Programs being prepared by TRADOC.

Another potential Reserve/National Guard application of UTRAIN, that has been studied but not tried, would be to implement the course in Officer Candidate Schools and NCO Academies conducted for National Guardsmen by states.

SPECIALIZED TRAINING

UTRAIN has also been used to prepare instructors to conduct specialized training. Research personnel presented the course to soldiers designated to become instructors for the REALTRAIN⁶ Controller Training Course at Fort Knox. Although instructors claimed to be proficient performance-oriented trainers, several major misunderstandings became apparent during the practical exercises. The principles covered by UTRAIN later were the bases for reorganizing the Controller Training Course into effective performance-oriented modules.

The experience with REALTRAIN indicates that UTRAIN can be valuable for preparing officers and NCOs to train new or reorganized units. To insure that trainers perceive the course as directly applicable to their mission, practical exercise tasks should be the same as the tasks to be addressed in the unit training. The UTRAIN practical work should then be expanded to have instructors prepare any required documentation, such as lesson plans and performance tests, to support training.

CONCLUSIONS FROM OTHER APPLICATIONS

RESULTS OF ADDITIONAL APPLICATIONS

A "training-to-train" course based on UTRAIN is relevant to NCO-level unit trainers. Such a course is important since NCOs who have had previous experience as instructors can be expected to resist the principles of performance-oriented training. To reduce that resistance and to insure that NCOs can deliver performance-oriented training, each soldier should present training on at least two practical exercise tasks. Whenever possible, middle-level NCOs should deliver training on both a manipulative and a cognitive task.

UTRAIN is also suitable for introducing performance-training techniques to Reserve/National Guard trainers during a multiple unit training assembly. For such an assembly, the practical exercises can be presented in six-man groups, thus enabling completion in eight hours. It is important to repeat, however, that the trainers should not be considered fully qualified after only one practice presentation.

UTRAIN principles can also be relevant for specialized element training. In such a situation the course should consider the specific tasks to be addressed in the training. Problems associated with those tasks should be discussed in detail, and representative tasks should be used for the practical exercises. Since soldiers who conduct specialized training are often expected also to develop lesson plans and tests, UTRAIN practical work should be expanded to address those management tasks.

CAUTIONS FOR MODIFYING UTRAIN

Presentation of UTRAIN in the four situations previously discussed confirmed that the course can be modified for several environments. Experience in those situations also indicated three characteristics of the instruction that should not be altered:

- (1) There should be maximum student participation when presenting the principles and techniques of performance-oriented training. If UTRAIN is to be an effective vehicle for introducing performance-oriented training, it

⁶ REALTRAIN is a competitive training method with an objective casualty assessment system. For detailed information see *Tactical Training for Combined Arms Element REALTRAIN*, TC 71-5, January 1975.

must exemplify the principles of performance-oriented training. As discussed earlier, the string and paper box exercises are controversial, but they do keep soldiers actively involved while necessary information is presented. The exercises should only be eliminated if they can be replaced with tasks that are unfamiliar to the students, are short enough to be taught in about 20 minutes, and are cheap enough to allow each soldier to receive the training.

- (2) Practical exercise tasks should be similar to those tasks soldiers will encounter on the job. A false but common objection to performance-oriented training techniques is that they do not apply to "soft skill" tasks. If soldiers will deliver training on soft skill tasks on the job, such tasks should be represented in the practical exercises. Types of tasks to be considered are:

- (a) Manipulative tasks with a product, such as splicing field wire.
- (b) Cognitive tasks with a product, such as computing a charge for a mortar.
- (c) Cognitive tasks without a product, such as issuing fire commands for a tank gunner.

- (3) Practical exercise tasks should be unfamiliar to soldiers acting as students. This characteristic is vital since it is the only way to be sure that interactions between the instructor and trainee are meaningful. Also, it makes it possible to evaluate instructors objectively. Rather than focusing on relatively unimportant aspects of the training process, such as gestures or questioning techniques, evaluation of the instructor can focus on the number of soldiers who pass the performance test.

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APPENDIXES

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APPENDIX A

**INTERVIEWER INSTRUCTIONS AND
SAMPLE DATA COLLECTION FORMS FOR UNIT SURVEY**

PERSONAL DATA (INITIAL INTERVIEW)

Rank: _____

Type Unit: _____

TO&E Position: _____

Time in Present Position: _____

INITIAL INTERVIEW INSTRUCTIONS

1. Read each activity statement carefully. Think about the statement as it applies to each level of training that is, or might be, carried out in your unit. By level of training we mean: the training of the BATTALION in CONDUCT OF THE BATTALION IN THE ATTACK and other required capabilities; training of COMPANIES in CONDUCT OF THE COMPANY IN THE ATTACK, etc.; training of PLATOONS in CONDUCT OF THE PLATOON IN THE ATTACK, etc.; training of SQUADS/CREWS to FIRE A CREW SERVED WEAPON, etc.; and training of INDIVIDUALS to LOAD AN INDIVIDUAL OR CREW SERVED WEAPON, etc.
2. Fill in the boxes as follows. (If the activity is not presently carried out by personnel in your unit please assume, for the purposes of this exercise, that your unit has just been requested to carry out the activity.)
 - (a) Mark with the letter "P" the TO&E position(s) who is (would be) designated as the primary Officer or NCO for carrying out the activity.
 - (b) Mark with the letter "A" other TO&E positions who do (may) assist in carrying out this activity.
3. Read the remarks listed. If any remarks apply, check the levels of training to which you feel they apply, e.g., ___all levels ___Bn ___Co ___PL ___SQ ___I.
4. Consider any P or A in your own TO&E position. Circle the letter if you have personally carried out this activity during your present assignment.

Preceding page blank

5. The following questions on conditions should be answered if appropriate. Limit questions on conditions to interviewees whose TO&E positions have been designated (question 2) as likely to carry out the activity. If sufficiently detailed information has been obtained from one such interviewee, the questions on conditions need not be pursued further in subsequent interviews.
- (a) What are the source documents you used?
 - (b) What support did you get from your branch service school?
 - (c) What other information did you get?
 - (d) What initiated the task?
 - (e) How much time did you have?
6. Ask the interviewee to identify (from among all the activities he does or may carry out) the activity in which he would most prefer to receive additional training. Have the interviewee place a 1 in front of this activity (the Unit Training Model sheet may be used for this purpose). Repeat this question until all activities which might possibly carry out are numbered 1,2,3,...n.

PERSONAL DATA (SUBSEQUENT INTERVIEW)

Rank: _____

Type Unit: _____

TO&E Position: _____

Time in Present Position: _____

SUBSEQUENT INTERVIEW INSTRUCTIONS

NOTE: Questions will be limited to those activities the interviewee might do based on the matrices completed in the initial interview.

1. Discuss each activity the interviewee may do.
2. Ask "Have you carried out this activity in your present assignment?"
If the answer is "YES" circle the letter under his TO&E position shown in the matrix completed in the initial interview.
3. The following questions on conditions should be answered if appropriate. Limit questions on conditions to interviewees whose TO&E positions have been designated (question 2) as likely to carry out the activity. If sufficiently detailed information has been obtained from one such interviewee, the questions on conditions need not be pursued further in subsequent interviews.
 - (a) What are the source documents you used?
 - (b) What support did you get from your branch service school?
 - (c) What other information did you get?
 - (d) What initiated the task?
 - (e) How much time did you have?
4. Ask the interviewee to identify (from among all the activities he does or may carry out) the activity in which he would most prefer to receive additional training. Have the interviewee place a 1 in front of this activity (the Unit Training Model sheet may be used for this purpose). Repeat this question until all activities which might possibly carry out are numbered 1,2,3,....n.

1. Who designates the critical training tasks which INDIVIDUALS AND/OR UNIT ELEMENTS must carry out to meet assigned missions?

REMARKS

"Check the level of training to which the remark applies"

PRODUCT/INFORMATION IS NOT
ESSENTIAL. all levels Bn
 Co PL SQ I

DONE BY OTHERS OUTSIDE THE
BATTALION. all levels Bn
 Co PL SQ I

LEVEL OF CAPABILITY TRAINED	TO&E POSITIONS									
	Bn C.O.	Bn X.O.	Bn S3	Asst S3	Co C.O.	Co. X.O.	Plat Ldr	Plat Sgt	Sq Ldr	Sec Ldr
BN/SQD										
CO/TRP/BTRY										
PLATOON										
SQ/CREW/SEC										
INDIVIDUAL										

2. Who identifies the essential conditions under which the tasks must be performed?

REMARKS

"Check the level of training to which the remark applies"

PRODUCT/INFORMATION IS NOT
ESSENTIAL. all levels Bn
Co PL SQ I

DONE BY OTHERS OUTSIDE THE
BATTALION. all levels Bn
Co PL SQ I

LEVEL OF CAPABILITY TRAINED	TO&E POSITIONS									
	Bn C.O.	Bn X.O.	Bn S3	Asst S3	Co C.O.	Co. X.O.	Plat Ldr	Plat Sgt	Sq Ldr	Sec Ldr
BN/SQD										
CO/TRP/BTRY										
PLATOON										
SQ/CREW/SEC										
INDIVIDUAL										

APPENDIX B

INTERVIEWER INSTRUCTIONS AND DATA FORMS FOR THE TELEPHONE SURVEY OF ARMY SERVICE SCHOOLS

INTERVIEWER INSTRUCTIONS

GENERAL

During this initial phase of HumRRO Work Unit UTRAIN, a complete listing of programs that is offered to Combat Arms OFF's and NCO's is being made. Programs identified should be limited to those that are designed to prepare OFF's and NCO's for unit assignments at battalion commander level and below. Primary programs of interest identified by HumRRO prior to the telephone survey as well as other special programs identified during the actual telephone interviews will be evaluated. On the basis of additional information collected over the phone for each program, a limited number will be selected for actual on-site visits. Additionally, data collected on all programs will be used to provide a description of the current status of unit training management and methods of instruction training presently available and/or soon to be available for Combat Arms officers.

Two answer forms have been prepared for data collection.

FORM A

Location of organizations contacted and the specific organization(s) are to be identified along with the interviewers name and dates of key telephone conversations. In addition, provision has been made for recording the name, dept and job positions of all interviewees providing information/answers to the specific questions included in Form B. Questions each interviewee answered should be indicated by circling appropriate question numbers to the right.

FORM B

SPECIFIC

This form is to be completed for each primary program an organization administers which (1) is designed to prepare OFF's and NCO's for unit assignments as battalion commanders or below, and (2) might logically include instruction on either or both training management and methods of instruction. In addition, this form is to be filled out for any additional programs identified during the telephone interview which provide a significant, clearly identifiable component of instruction on training management or methods of instruction.

INFORMATION ITEMS REQUIRED

1. Organization administering the program.

2. The official name of program and whether the program is considered primary or special by the interviewer.
3. Unit assignments students in the program are being trained for according to official Army/school doctrine. Check or circle appropriate positions provided and list any others given that may be specifically related to training.
4. "Is instruction on training management and/or methods of instruction provided in this program?" Circle Yes or No.
5. Indicate type of instruction by checking either or both training management ____ or methods of instruction ____.
6. Identify the instruction being given specifically, i.e., an electives course, a block, section, etc. Also whether or not it is based on CONARC approved POI or Sub. Sch. (if so, exactly what number, etc.) proponent agency or locally written, etc.
7. "How many hours of instruction are provided?"

Total Hours _____

Hours on Training Management _____

Hours on Methods of Instruction _____

8. "Is this instruction on training management or methods of instruction presently under revision?"

Check Appropriate Block _____

"Has this instruction been revised within the"

last year _____

last 2 years _____

last 3 years _____

NOTE: Questions 9 and 10 are to be directed at the instruction presently under revision if planning on this instruction is reasonably underway. Otherwise, questions are directed at the present on-going instruction.

9. "What served as a basis for developing the content of this instruction?"

Check those publications listed on the answer form that are mentioned. List other publications and additional bases given in the spaces provided.

10. Ask for each publication or other basis whether mentioned in 9 above or not:

"To what degree did Basis influence the instructional content being (to be) provided."

"A great deal?"	3	Mark code in second
"Somewhat?"	2	space provided on
"Very little?"	1	the answer form.

11. Additional Comments:

TELEPHONE ANSWER FORM A

Site Telephoned: _____

Organizations Contacted: _____

Interviewer: _____ Dates: _____

Interviewees:

Questions
Responded to:

- | | |
|---------------------|----------|
| 1. Name: _____ | 1 4 7 10 |
| Dept: _____ | 2 5 8 11 |
| Job Position: _____ | 3 6 9 |
| 2. Name: _____ | 1 4 7 10 |
| Dept: _____ | 2 5 8 11 |
| Job Position: _____ | 3 6 9 |
| 3. Name: _____ | 1 4 7 10 |
| Dept: _____ | 2 5 8 11 |
| Job Position: _____ | 3 6 9 |
| 4. Name: _____ | 1 4 7 10 |
| Dept: _____ | 2 5 8 11 |
| Job Position: _____ | 3 6 9 |
| 5. Name: _____ | 1 4 7 10 |
| Dept: _____ | 2 5 8 11 |
| Job Position: _____ | 3 6 9 |
| 6. Name: _____ | 1 4 7 10 |
| Dept: _____ | 2 5 8 11 |
| Job Position: _____ | 3 6 9 |

NOTE: Indicate the interviewee who provided or verified information in each question.

TELEPHONE ANSWER FORM B

☐ OFF PROGRAM
☐ NCO PROGRAM
 COMBAT ARM

1. Organization Telephoned: _____

2. "Full" Name of Program: _____

☐ Primary ☐ Special

3. Mark future unit assignments for which students are being trained.

OFF: BN CO _____ BN.S3 _____ AST BN.S3 _____ CO CMDR _____

CO XO _____ PLAT LDR _____ OTHERS: _____

NCO: BN OPN SGT _____ AST OPN SGT _____ PLAT SGT _____

SQ LDR _____ OTHERS: _____

4. Instruction Provided: YES or NO

5. Type of Instruction: Training Management _____
 Methods of Instruction _____

6. Identity of Instruction: _____

7. Hours of Instruction: _____
 Hours of Training Management: _____
 Hours on Methods of Instruction: _____

8. Revised Within: Presently Under Revision _____
 Last Year _____
 Last 2 Years _____
 Last 3 Years _____

9. Basis of Instruction: Existing FM 21-5 _____ ... _____
 "Check Sources Given" New Draft FM 21-5 _____ ... _____
 CON REG 350-100-1 _____ ... _____
 Existing FM 21-6 _____ ... _____
 New Draft FM 26-6 _____ ... _____
 List below other bases given: _____
 _____ ... _____
 _____ ... _____
 _____ ... _____

10. Degree of influence of all bases to include those not mentioned initially in Question↑

11. Additional Comments: (USE BACK OF PAGE)

APPENDIX C

INSTRUCTIONS FOR SCHOOL VISITS

Explanation to School

I am with the Human Resources Research Organization, HumRRO, which is a research and development firm that has worked almost exclusively for the Army over the past 20 years.

We are now working on a project with the Army Research Institute on ways of improving the training capability of unit training personnel. This project is one of several research and development efforts being pursued in support of the recent Chief of Staff directive concerning decentralization of unit training responsibilities to battalion level and below.

Our particular project is to produce supplemental training to help unit trainers and training managers improve their capability along the lines indicated in this new doctrine. We are beginning our work with visits to combat arms units in the field to survey their training capabilities and problems. But in addition to this we are also interested in finding out what training is currently available in the schools that pertains to training management or methods of instruction for unit training personnel.

Our purpose in looking at these school programs is to identify those aspects of training for unit trainers which are being covered in school programs, as well as those which are not. In other words, we are interested in identifying where school training leaves off, and where other programs in support of decentralized unit training should begin.

In this connection we contacted your school several days ago and verified that you have a _____ hour block of instruction on (training management) (methods of instruction) within the _____ course.

Today we would like to obtain further information on this block of instruction. If possible we would like to accomplish two things:

1. Obtain a copy of the lesson plans, advance sheets and any other supporting materials for this block of instruction.
2. Spend about 15 to 30 minutes with someone, preferably the person responsible for its preparation, who could answer a few questions about its scope and content.

Instructions to Interviewer

1. Obtain copy of POI and relevant lesson plans and tests.
2. Go over POI -- with or without someone from the school -- to make sure you have all lesson plans, PE's and tests that pertain to training management or MOI. (Tests may be part of or described in related lesson plans, or they may be a separate "block of instruction" in POI.)
3. Get questions on following page answered.

School _____ POI _____

Interviewee _____ Block of Instrn _____

First I would like to pursue a couple of points which reported to us in our earlier communication with the school here.

I understand that this block of instruction was revised (last year) (____ years ago) (is currently under revision). Is that correct?

When do you expect (to revise it again) (the revision to be completed)?

I understand that (FM _____ TM _____ Con Reg _____
Trng Circ _____) were used as a basis for revising the course.
Is that correct?

Any others?

Other than this particular _____ hour block, can you think of any other instructions given in the _____ course that pertains to the management or conduct of training?

Now I'd like to ask a couple of questions about the content and scope of the lesson plans for (training management) (methods of instruction).

In your judgment, to what extent does the instruction in (methods of instruction) (training management) apply to the conduct of unit training as opposed to individual training?

As I expect to get a better picture of what your instruction includes when I get a chance to read through the lesson plans you've given me, can you think of any other materials pertaining to this block of instruction -- tests, handouts, exercises, etc. -- that I should have in order to get a complete picture of the instruction?

Can you think of any significant changes or improvements in the instructional content that are part of present instruction, but which are not at the moment documented in the lesson plans?

If I have any further questions about the instruction that occur to me later when I go through the lesson plans, would it be all right if I give you a call? What is your AUTOVON?

APPENDIX D

RESULTS OF IOBC QUESTIONNAIRE

SUBJECTS: 197 second lieutenants who completed first UTRAIN block after implementation in IOBC.

RESULTS

1. Did you, after the introduction to the block, understand the purpose of the instruction to follow?

Yes 98%

No 2%

2. Did you understand the sequence of the instruction to follow?

Yes 92%

No 6%

3. Did you understand the scope of the instruction to follow?

Yes 94%

No 4%

No Response 2%

4. Was the material presented meaningful, considering your experience and anticipated career development?

Yes 78%

No 20%

No Response 2%

5. Did the instructor present the material effectively?

Yes 98%

No 2%

6. Was sufficient reference material available to you for this block of instruction?

Yes 86%

No 12%

No Response 2%

7. How does the UTRAIN block of instruction compare with previous MOI classes you have received?

Far better 29%
A little better 33%
About the same 24%
Not as good 12%
Much less effective 2%

8. Rate the effectiveness of the string and paper box episode in portraying the techniques of demonstration procedures:

Extremely effective 33%
Quite effective 24%
Fairly effective 24%
Not very effective 8%
Not effective at all 10%

9. Did the instruction adequately prepare you to give your 15 minute presentation?

Yes 88%

No 10%

No Response 2%

10. Rate the critique you received at the completion of your presentation:

Very helpful 49%
A little helpful 35%
Of no particular value 14%
No response 2%

11. The overall pace of instruction was:

Too fast 4%

Too slow 29%

About right 67%

12. How effective was the overall instruction in preparing you to conduct performance-oriented training?

Extremely effective 20%
Quite effective 55%
Fairly effective 14%
Not very effective 4%
Not effective at all 6%